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July 8, 1955

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Item 17

TO: Mr. L. E. Damon, Vice President  
Nev-Tah Oil and Mining Company

FROM: J. H. Wren

(See Toulon Mill map in 275, Item 15)

SUBJECT: WOLFRAM CORPORATION TUNGSTEN PLANT INSPECTION, NIGHTENGALE  
MINE AND PEMBERTON-COUNTISS PROPERTIES PRELIMINARY EXAMINATION.

WOLFRAM CORP. MILL:

The Wolfram Corporation tungsten plant was inspected on July 6th and 7th. Following observations may be of importance regarding the alignment of business arrangement relative to the mill's purchase.

1. MACHINERY:

- A). While much of the plant machinery is somewhat old, it is serviceable and in good condition.
- B). Equipment unit power transmission is out-of-date.  
Example:- Flat belt drives off of jack shafts instead of efficient close coupled Vee belt drives. Subsequently, this condition may be corrected.
- C). Reportedly, the equipment is kept up in shape, preventative maintenance done and a stock of operating parts kept on hand.
- D). All of the mill's rolling stock must be included in the purchase negotiations, as it is required for operation. The rolling stock consists of:  
1 H. D. 14 A. C. Bulldozer, one front end loader, one light power shovel, service truck.
- E). Besides an inventory of repair parts, the mill's management has an inventory of electric motors, conveyors and other items which can be utilized to advantage. Some spare motors should be included in the purchase inventory.

2. MILL:

- A). The mill building and floor plan is not the result of a comprehensive planned construction program. It is the result of a series of metallurgical changes, plant revamping, and additions over a long period of years.
- B). Fines bin capacity is limited but probably will serve if proper coordination is used.
- C). If the company acquires the plant, the gravity circuit can continue operating for income purposes while the flotation unit is being set up. The gravity circuit will handle approximately 140 tons of ore per day depending upon character.

- D). For the most part, the equipment is at the mill site and some of it is set. It is suggested that the consulting metallurgist inventory the equipment items which will have to be purchased and deliver that required inventory to the purchasing department, with a cost estimate.
- E). The Nevada-Massachusetts Company metallurgist states that the ball mill can be used, but a smaller rod mill would be more efficient. The ball mill now set will only use a partial charge of grind balls when the tailings are run through.
- F). Time element to put the flotation circuit into production will require not less than six weeks after commencement of the project. This will also include arrangement to deliver the tails from the pond to the mill. During that interim, all income will result from gravity treatment of scheelite ores.
- G). An itemized cost estimate regarding equipment purchase and installation costs should be obtained at this time from the consulting metallurgist. That data will be necessary prior to compiling an overall immediately on-call capital subscription.
- H). The laboratory at the plant is not complete. About 2/3rds of the necessary items are present.
- I). It is suggested to purchase and install an automatic sampler on the mill tails and one on the mill heads.
- J). An advantage with regard to the acquirement of this plant is that the experienced operating staff comes with the deal. The consulting metallurgist is a very valuable man, in view of the fact that he not only has extensive tungsten milling experience, but is particularly acquainted with this plant and the ores of the district. He also has done research on the tailing pond problems and has worked out a logical method to process the tonnage. He has agreed to personally align the treatment procedure and follow through when and if he is subsequently needed.

### 3. MILL TAILS:

- A). Some 125,000 tons of mill tailings are estimated to be available for treatment. Mr. George Crerar, consulting metallurgist for Nevada-Mass. has been familiar with the Toulon plant efficiency throughout the term of the tailing pond building. He stated that his estimate of tailing grade was .17

to .18 WO<sub>3</sub>. This figure is also the estimate of the mill superintendent, Mr. Ray L. Clausen. Mr. Clausen is a very good millman and has an excellent practical background. Over and above company directions, he has carried operating data which is of value to us now.

- B). Added to the above tailing grade estimates are areas which were built up during hi-grade runs, circuit and ball mill surges that have been impounded, etc. One of these impounded areas will, no doubt, run in excess of 1% WO<sub>3</sub>. These areas are not calculated in the .17 - .18 estimate. There is also a magnetic separator pile of rejects that can be fed in for regrind to release the scheelite.
- C). Aside from about a \$5,000 investment to definitely tie down actual tailings grade by drilling, and bailing out semi-solid slimes to gain representative samples, the cost of equipment, labor, laboratory work on the basis of pattern drilling plus the time element seems inadvisable at this time. The mill has a stockpile of samples taken from the tails for the past several years. They were unguarded samples and unless management desires to go into an extensive tailing pond evaluation program, the above samples would be as representative as we can now obtain.
- D). If the stockpiled mill tailing samples taken over a period of several years are deemed satisfactory with regard to tailings pond grade evaluation, the following procedure is suggested:

Split an assay sample out of each tailing sample.

Set up a log book on this particular sampling procedure with each sample date, tonnage represented, and number of the sample.

These samples should be sent to Deason and Nichols of Salt Lake City, Utah, after first splitting one sample in each 25 out. These one-in-twenty-five splits will be check samples and can be sent any laboratory of repute desired.

After the sample returns come in, a calculated composite should be compiled on the basis of weights. That sample calculation will deliver the probable estimated tailings grade. It should be pointed out that in view of the fact that slimes were not settled when the samples were taken, the slime fraction will not be properly represented. For that

reason, the actual tailing pond grade will no doubt be higher than the calculated tailings average.

- E). According to Mr. George Crerar, he expects to obtain 75% of the tailings value which will market at \$63 per unit. There will be another 10% which can be beneficiated to a \$63 market, but before setting up for it, that product will probably bring around \$48 per unit. The following estimates are based upon 75% at \$63 and 10% at \$48.

Economics--125,000 Tons Tails:

.17% W<sub>03</sub> at \$63 per unit equals a gross value of.....\$10.71 per ton.

75% recovery at \$63 per unit..... 8.03 " "

10% of recovery at \$48 per unit..... .56 " "

Possible gross recovery of the 75% at \$63 per unit.....\$1,003,750.00

Possible gross recovery of the 10% at \$48 per unit..... 70,000.00  
\$1,073,750.00

Estimated milling, marketing of flotation, treatment of 400 tons per day tailing direct, cost per ton ..... \$2.00

Estimated \$6.69 per ton net profit prior to mill purchase amortization deduction, management overhead and taxes..... \$736,250.00

NOTE: The above estimates will be dependent upon assay results. However, factors involved as gained from Mr. Crerar seem reasonably accurate.

#### 4. NIGHTENGALE PROPERTY:

- A). This property is some 55 miles from the Wolfram mill. 21 miles is over well-graded graveled road and the balance over oiled highway.
- B). The property holds strong scheelite mineralization well over 2,000' in length. Ore occurs on granite-limestone contacts as well as making out into the steeply dipping limestone beddings.
- C). The main workings were first operated during World War #1. At that time, a mill was running on the property and some 23,000 tons of tails are stock-piled which reportedly run between .23 and .27 W<sub>03</sub>.



5. PEMBERTON-COUNTISS PROPERTY:

(See Toulon mill map in 275, Item 15)

- A). This property is some seven miles from the Wolfram Mill. An estimated \$30,000 has been spent on road building and ore zone stripping. Originally, the property was opened up for a mill that was built some 3 miles west of the Toulon plant. The mill was about 75% built and the operators ran out of funds. That plant is now up for forced sale of equipment.
- B). The ore zone is difficult to estimate with regard to grade in view of ore blocks which hold considerable waste cubics therein and will be difficult to segregate. The operation would be an open pit project and the first mining face and bench plan has been prepared. About 1000 tons of ore is stockpiled and ready to load out.
- C). This property will make an excellent filler for the gravity circuit of the Wolfram mill providing grade holds .3%  $WO_3$ . There is a possibility in view of the nearness to the mill that the economic cut-off point would be lower than .25%. It'll take some calculation after a test run is made to know. Deducting 25% for mill loss .3% would leave a recovered dollar volume of \$14.17 per ton. Mining will cost \$1 per ton, loading .25 cents per ton and milling will be about \$3.00 per ton. The haul has been bidded at \$2, but that may be high (road is steep and rough from the highway). If the deposit will meet grade requirements, the present bench plan already established releases a block 15' X 100' X 300' minimum.
- D). It is my suggestion to run the stockpile and keep accurate records on it prior to additional breakage. We can tell when the first tonnage hits the tables whether or not it is economical. If it is economical, the property will assure that the mill is turning over at capacity continuously, when a better grade product is not available. 0.3%  $WO_3$  at this location from an open pit will be more profitable than the Stormy Day ore at 0.6%  $WO_3$  in view of the Stormy Day's underground development and production costs, the 100 miles plus ore haulage. This property will require no additional development work until the above mentioned bench has been mined out.
- E). In the event that the deposit is proven to run 0.3%  $WO_3$  the above mentioned developed block, after being produced, will be duplicated by merely opening up another bench, providing that subsequent exploration indicates grade strength.
- F). Gross recovery after a 25% mill loss would amount to \$1,960 per day, on the basis of a \$63 per unit market at only a 3% grade, @ 140 tons per day.

6. CLAUSEN-BOTTOMLY PROPERTY:

This property was last operated by the Codero Mining Company. Attached please find a copy of their milling results. John H. Uhalde made the actual preliminary inspection of this deposit of scheelite bearing ore and has the detailed data.

7. JOHN H. UHALDE MINING AND HAULING ECONOMICS:

APPROXIMATE COSTS:

PEMBERTON-COUNTISS ORE:

Estimated 32,000 tons of 5 Lb.  $WO_3$  ore.

Per ton: To mine.....\$1.00  
To load..... .40  
To haul..... 1.05  
\$2.45 F.O.B. Mill

CLAUSEN-BOTTOMLY ORE:

Estimated 9,000 tons 6.3 Lbs.  $WO_3$

Per ton: To mine.....\$1.00  
To strip &  
prepare... .35  
To load.... .40  
To haul.... 1.45  
\$3.20 F.O.B. Mill

NIGHTENGALE TAILS:

Based upon a movement of 350 to 400 tons daily.

Per ton: To haul...\$1.87  
To load.... .20  
\$2.07 F.O.B. Mill

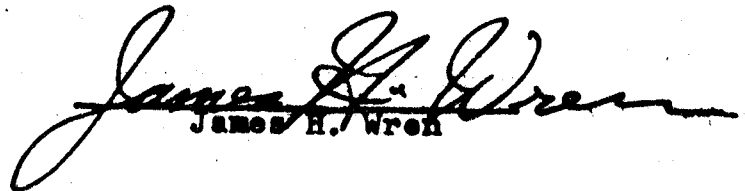
NIGHTENGALE ORE (open pit):

Per ton: To strip...\$0.27  
To load.... .77  
To mine.... 1.21  
To haul.... 2.72  
\$4.97 F.O.B. Mill

NIGHTENGALE ORE (underground):

Per ton: To mine...\$3.93  
To slush  
& tram.... .73  
To load.... .37  
To haul... 2.72  
To develop(1.60) optional  
\$9.35 F.O.B. Mill

NOTE: Added to the herein estimated immediately available positive Nightengale ore would be the block partly developed in the main shaft area by an incline winze and other areas along the mineralized zone in need of development of proven ore.

  
James H. Wren

cc: Mr. C. Dollarhide  
Mr. A. L. Damon  
Mr. O. Zapf  
Engineering File  
J. H. W. File



GEORGE CRERAR

MINERAL DRESSING ENGINEER  
BRICKLAND, CALIFORNIA

July 18, 1955

Nov-Tah Oil & Mining Company,  
430 Gazette Building,  
Reno, Nevada.

Attention Mr. A. L. Daman, General Manager

Dear Mr. Daman:

The following estimates are more or less pertinent to the proposed project of operating the present gravity mill at Toulon on ore and re-equipping the gravity and flotation section to treat the tailing from the present dump.

If a 3' x 6' Marcy Rod Mill, or 3' x 8' ball mill of another make should be installed in the gravity plant in place of the rigid rolls, the plant could have a capacity up to 3 or more tons per hour -35 mesh. The primary rolls would be kept in operation. The thru product of the rolls would be treated on a 35-mesh duplex Callow screen and the rod mill would operate in closed circuit with the Callow screen.

The -35 mesh product-- which would actually be about a 48 mesh product-- would be pumped thru two 4" Krebs Cyclones, the underflow of which would be the feed of the launder type Deister Machine Company Hydraulic Sizers-- one for each table-- and the cyclone overflows would go to a large thickener to be prepared for flotation feed.

If the hydraulic sizers and tables are equipped with proper flowmeters and the table decks are rebuilt and riffled scientifically the gravity tailing can be discarded to a waste dump. Middling would be returned to the rod mill and the thickened slime pumped to the re-equipped flotation #1 conditioner in the tailing section.

Inasmuch as the flotation product from the gravity mill could amount to 35-40 tons, it should be stored in a stirred tank and fed into the flotation circuit gradually thruout the 3 flotation shifts if the gravity mill is operated but one or two shifts.



I figure the tailing dump will be treated at the rate of 300-350 tons daily.

Practically the only costs the flotation step will have over the gravity will be that of reagents and acid for the upgrading of the concentrate and elimination of phosphorus.

The estimated cost of flotation reagents is as follows:

Soda Ash	2.00 # per ton	\$44.00 per ton	-	4.40 cts. per ton
Sodium Silicate	1.75 # " "	40.10 " "	-	3.50 " " "
Sodium Cyanide	0.15 # " "	22.50 " lb.	-	2.40 " " "
Quebracho	0.30 # " "	22.00 " "	-	6.60 " " "
Xanthate 25	0.15 # " "	35.00 " "	-	5.25 " " "
Cresylic Acid				
1/2 Barrett #4	0.15 # " "	10.60 " "	-	1.60 " " "
Oleic Acid-mixed	0.25 # " "	15.33 " "	-	3.80 " " "
BTO	0.30 # " "	13.33 " "	-	4.00 " " "
				<u>31.55</u>

Other reagents may be used and/or substituted for some of the above bringing reagent costs up to approximately 35 cts. per ton of solids in the flotation feed which might amount to 100 tons daily.

Estimated milling costs are

Reagents - Flotation alone	\$ 0.12
Muriatic acid flot. conc. treat.	0.50
Labor 16 shifts @ 1.75 per hr. ?	0.60
Power 20 KW per ton @ 1.3	0.26
Maintenance	0.15
Amortization - 1 year	0.25
Overhead - Taxes, Insurance, &c	0.22
	<u>\$ 2.10</u>

Labor cost will be less if the gravity ore section is operated but two shifts.

The mill could be arranged, however, so that if the present gravity section lacked tonnage for full time it could be put on tailing within an hour. As a matter of fact, I would rather see the fixed charges divided by 500 tons than by 400. 500 tons daily might crowd our water supply. However, the use of flowmeters on all equipment using water will not only conserve water but definitely add materially to the recovery of scheelite. On completion of improvements outlined for the gravity section, I expect recovery of WO<sub>3</sub> to be increased by one pound or more per ton.



List of equipment required to bring the present gravity mill up to date.

- 1 3x6 Marcy or 3x3 Denver Equipment Rod Mill and 5 tons or rods. - The Rod Mill to replace the present rigid rolls
- 6 Deister Machine Co. Hydraulic Sizers for launder attachment to take a probable 10 tons per hour -35 mesh deslimed feed from Krebs Cyclone
- 2 Krebs 4" Cyclones - Equipment Engrs. 41 Sutter St. San Francisco 4, California
- 1 Duplex Callow Screen equipped with 35 mesh stainless steel or phosphor bronze screen. One extra screen.
- 3 Brooks Flowmeters 2 1/2-15 GPM ) For Hydr Sizers
- 3 " " 1 1/2-10 " ) " " "
- 7 " " 5-10 " " Table Wash Water
- 2 " " 10-20 " " Callow Duplex Wash Water
- 2 " " 1 1/2-5 " " " " Oversize Wash

Order thru Specialty Sales Co. 208 South West Temple, Salt Lake City, Utah. Flowmeters with 1 1/2" flange unions.

On the tables, feed boxes will have to be repaired, or renewed. Wash water boxes, decks and riffing will have to be worked over.

The Callow screens are to replace the Hummer. The Hummer can be used as a trash screen in the tailing plant set-up.

List of main items required to re-equip the tailings mill- gravity and flotation.

- 2 Duplex Callow Screens - The Galigher Co. Salt Lake City, Utah.
- 7 Deister Machine Co. Hydraulic Sizers - launder type to size 12-13 tons per hour -35 mesh feed deslimed by 3 Krebs 4" cyclones.
- 1 Deister Concentrator Co. slime deck table standard size
- 1 New Deister Machine Co. triplex Plato deck except iron parts which we have on hand.
- 2 1/2 size Deister Machine Co. single Plato tables, - complete with motor drive 440 V. 60 C. 3 P.
- 3 Krebs 4" Cyclones to take approximately 17 tons per hr. -35 mesh pulp. Density about 3:1
- 5 New rubber deck covers for Deister Machine Co. triplex Plato tables.
- 1 Automatic pH controller and panel. Soda Ash to be fed by Syntron Vibrator into dissolving drum and the Na2CO3 solution to flow from there into pulp conditioner. Order from Specialty Sales Co. 208 South West Temple St. Salt Lake City, Utah.



1 Gravity Controller - Mine & Smelter Supply Co. (Masoco-Adams) Denver, Colo.

4 Clarkson Reagent Feeders - Equipment Engineers, Inc. 41 Sutter St. San Francisco, California.

2	Flowmeters 10-20 GPM - Callow Screen Wash Water
2	" 1 1/2-5 " " " Oversize Wash
7	" 5-10 " Table Wash
4	" 2 1/2-15 " Hydr. Sizers
6	" 1 1/2-10 " " "

Laboratory equipment for  $\text{WO}_3$ , P,  $\text{SbMo}$ . determinations.

Laboratory 500 Gram Flotation machine and 2x4 laboratory table for research.

Details supplied later if interested in re-equipping laboratory.

The main item in recovering the tailing will be a #6 Cat. Bulldozer or equivalent on the sands. Where the slime is undried in pools, a 1" pump on a float will do. Pumped slime would have to go over the trash screen for the reason that there will be brush and trash off the bottom. The Hammer top deck could be equipped with a 4-mesh screen and mounted on top of the tank bin to eliminate trash. Or it could be installed in the mill to take the mill feed ahead of the Callow screens. Flowmetered water would be added to this.

By replacing the former conveyor feeder a Feedweight, or similar, can be installed on the conveyor that will show the daily weight of the tailing milled and also the rate of feed carried by the conveyor. This will permit the operator to carry all the screens and ball mill will take. In other words, keep the mill up to maximum capacity.

Good used equipment can be substituted for any of the foregoing items where available.

The acid treatment plant in its simplest form will require

1 5'x5' - 3" redwood stave tank  
1 9' I.D. x 3' deep tank, 4" redwood stave. This tank will have to be supplied with 1 1/2" or 2" medium grained silica filtering tile. The outside tile will be shaped to fit the arc of the circle of the inside diameter of the tank.

These tanks will have to be acid-proofed with a soft asphaltum supplied by Standard Oil.



A 3" cheap cast iron centrifugal pump will serve as an agitator. Fittings can be supplied at the mill. A Wilfley will not do as it must have a good gland and suction.

For vacuum on the filter tank, a 4" triplex or rotary will do.

I will probably have to be present when installation of the foregoing acid treatment is made. I will get the address of the company making the filter tile from Nevada-Massachusetts Company.

A Beckman "M" type pH meter, laboratory type, will be required as the use of acid should be controlled to avoid waste.

Also, two drums of commercial Pyridine #2 should be obtained. In the 2nd acid treatment step some scheelite will go into solution. The tungsten will react with the iron surface of the agitation equipment producing the blue ditungsten pentoxide W<sub>2</sub>O<sub>5</sub> which indicates the apatite has been dissolved. The blue soluble tungsten can be precipitated by adding a gallon or two of #2 commercial Pyridine, thus eliminating a loss of W<sub>2</sub>O<sub>3</sub>. The Pyridine might be ordered direct from The Barrett Company

New York or thru American Cyanamid Co. If commercial Pyridine #2 is not available, there are a dozen other reagents that will accomplish the same purpose but will cost more. One pound of above Pyridine will precipitate 3-1/3# W<sub>2</sub>O<sub>3</sub>.

Considering the foregoing mill re-equipment as a whole, if it were my problem I would concentrate on the gravity section now and after that end was completed and in satisfactory operation I would then turn to the tailing and flotation section. The tailing would keep. The time involved in rehabilitating and operating the gravity section would permit building up a satisfactory personnel so that the following more extensive job should in the end cost less and eliminate possible mistakes and faulty construction.

Flotation and acid treatment would be next in line, - the first items to start on in the tailing mill. The thickened Krebs Cyclone overflow together with the overflow from the hydraulic sizer launder would constitute a light load for the flotation end and acid treatment steps and, therefore, favorable for breaking in operators and ironing out any defective equipment or flow sheet.



Of course there is much that can be done in the tailing section, which will not require close supervision, that can be done in parallel with work in the gravity section as suitable men become available. However, I favor concentrating on the gravity section.

Re an additional water supply; an excavation down below the sub-surface of the ground water level appears to be the most favorable solution.

The excavation could be carried out by a Cat.-Bulldozer and pump of 400 or more GPM capacity equipped with foot valve and priming water from present supply. Water level is but 10'-12' below ground surface.

The following is a screen test that was made on a 404 gram sample cut from Nightingale tailing composite of February 1955. Sample was first screened wet to wash slime off scheelite particles. The screen products were then air-dried, returned to their proper screens and put on the Tyler screening machine for 10 minutes:

Head Sample		0.14% WO <sub>3</sub>	% sizes	% WO <sub>3</sub> in products
+35 mesh	140.0 gms.	0.08%	35.3	11.20
-35 " plus 48	44.5 "	0.15%	11.2	6.75
-48 " " 65	43.0 "	0.17%	10.8	7.31
-65 " " 100	31.0 "	0.15%	7.8	4.65
-100 " " 200	54.0 "	0.14%	13.6	7.56
-200 "	85.0 "	0.29%	21.2	24.65
	397.5		99.9	

Head sample, average by products - 0.156% WO<sub>3</sub>

From the above it is fairly certain the tailing dump will average over 0.15% WO<sub>3</sub>.

The foregoing screen products were examined under the ultraviolet light and were, so far as we could see, entirely free, - with the exception of some in the plus 35 mesh fraction which would go to regrind in ball or rod mill to -35 mesh.

It is well to keep in mind that every 0.01% WO<sub>3</sub> (0.0001x100) captured by refined milling adds \$0.60 to the net value of the ore.

As a rough estimate the foregoing changes will approximate \$30,000.00. There are such a multitude of small items involved and lack of experienced and efficient labor that it is practically impossible to make a close estimate of costs



at this time. An experienced mill construction engineer could probably come closer. Time required may run into 3 months, depending on deliveries of new equipment.

Respectfully submitted

GC/c

  
Consulting Engineer



INVENTORY TOULON WORKS

July 1955

GRAVITY MILL

- 1 Wemco Table No. 4 Ser. No. 42-3043F
- 1 Wemco Table No. 4 " " 42-3043B
- 1 Table Motor GE 1-1/2 HP 220-440 Ser. No. 5578902
- 1 Table Motor GE 1-1/2 HP 220-440 " " 5618023
- 5 Plat-O Tables Belt driven
- 5 Plat-O Self Oiling Heads
- 1 Magnetic Separator
- 2 Wheelbarrows for separator rejects
- 1 12 x 16 Roaster Tube with oil burner
- 2 12 inch elevators 40 feet
- 1 8 inch Elevator 30 feet
- 2 6 inch Elevators 30 feet
- 1 Gallezher 2 cell Flotation Machine
- Motor Float Drive GE 5 HP 220-440 RPM 1735 Ser. No. BR11561
- 1 16 x 36 Rod Mill (concentrate regrind)
- 1 20 inch x 8 feet Screw Classifier
- Allis-Chalmers Motor Gear Reduction
- 1 Small Belt Conveyor conc. dewatering classifier to waste
- 3 Pairs Allis-Chalmers Rolls 14 x 24
- 1 Pair Stearns-Rogers Rolls 14 x 24
- Roll Drive GE Motor 75 HP, RPM 900, Ser. No. 684351 Extra paper pulley, 1 used - 1 new
- 1 Krogh 1-1/4" pump Allis Chalmers motor 1-1/2 HP 220-440 RPM 1740 Ser. No. 67794K
- 1 Table Drive Westinghouse Motor 10 HP, RPM 1140 Ser. No. 2319872
- 1 Wet Trommell Screen
- 1 Single Callow Screen
- 1 10-foot Cone
- 1 6-cell Sizer
- 1 Curtis Compressor, Wagner Motor 1/2HP, RPM 1725, Ser. No. IU
- 1 Ingersoll Rand Motor Pump Ser. No. 2PVH10. Motor 10 HP, 220-440 V. RPM 3470, Ser. No. EL1677
- 2 2-ton Chain Blocks
- 1 3-ton Chain Blocks
- 1 Braun Pulverizer Type UA, GE Motor 1-1/2 HP, 220-440 V. RPM 1740, Ser. No. 5404140
- 1 Denver Fire Clay Co. Crusher No. 2, GE Motor 1-1/2 HP, 220-440, RPM 1740, Ser. No. 5431106
- 1 Watson Generator KW5 Amps. 40 Volt 125 RPM 1140, Type AW8P, No. 32442 Westinghouse Motor 7 1/2 HP, RPM 1725, Ser. No. 2330558
- 10 GE Magnetic Switches 7 1/2 HP, 440 V., No. GR7006D40H
- 3 Square D Motor Switches 440 7 1/2 HP Type KXR1
- 1 GE Starting Compensator Type 1, Form K, 100 HP
- 1 De-ion Linestarter Size 2 Style 999207A Westinghouse
- 1 GE Motor 2 HP RPM 1150 Ser. No. 3999489
- 1 Power Hacksaw



- 1 Sterling Grinding Stand No. 1
- 1 9 x 16 Steel Thickener Tank
- 1 8 x 30 Wood Thickener Tank
- 1 Toledo Platform Scale Style 501 No. 717583, Cap. 2850
- 3 Primary Transformers 6600 V. to 440 Volt
- 2 Lighting Transformers on pole adjacent to substation
- 1 Tyler Hammer Electric Screen 4' x 5' 2-surface Ser. No. 11542
- 1 Outside Ore Bin for odd lot ores, together with conveyor belt from crushing plant
- 3 Clarkson Reagent Feeders mounted near concentrate flotation section
- 1 Lennox Furnace (for mill equipment with oil burner, electrically driven)
- 1 P&H Electric Welder, Type H263, 440 V. with leads for same
- 1 Thor Electric 2-wheel grinder complete with stand for same
- 1 Acetylene Welding & Cutting Unit complete with Igniter
- 1 Small Syntron Feeder located near pump sump
- 1 Bendarari Jiggs 24" Ser. No. 380
- 1 440 to 110 Volt Transformer located near Tyler screen
- 1 Oil Storage Tank, tank car type, located near spur track and marked "Rare Metals Corporation".
- 1 10" x 20" Farrell Jaw Crusher driven by 40 HP GE Motor with multiplex Vbelt drive to crusher
- 1 Conveyor located above Tel Smith secondary crusher approximately 18" x 3'
- 1 Acme Root Blower with electric motor - Vbelt drive
- 1 Main Elevator Drive Falk Reducer, motor unit
- 1 3" Wilfley pump driven by U. S. Electric Motor, 10 HP in main pump sump

#### Crushing Plant

- 1 Tel Smith Crusher, Westinghouse Motor 25 HP, RPM 865, Ser. No. 2318673
- 1 Fairbanks-Morse Induction Motor Starter No. 46284 30 to 40 HP
- 1 3 foot x 6 foot Pan Conveyor
- 1 Rite-Loc Speed Gear Reduction Motor 1-1/2 HP, RPM 60, Ser. No. 4927
- 1 16 inch 60 feet Conveyor Belt
- 1 12 inch Elevator Belt 40 ft. centers
- 1 5/16 Punched Trommel Screen, GE Motor, 10 HP, RPM 870, Ser. No. 4830669
- 1 Westinghouse Auto-Start 5 to 10 HP, No. 521035A
- 1 12 x 20 Fine Ore Bin, wood
- 1 Pan Conveyor (spare for main ore grizzly) no power



INVENTORY TOULON WORKS

July 1955

TAILINGS PLANT SECTION

- 5 Plat-O Tables
- 5 Self-Oiling Heads, Westinghouse Motor 1-1/2 HP, 220-440 RPM 1134  
Ser. No. 117EM877 Reeves Drive No Pulley
- GE Motor 1-1/2 HP, 220-440 RPM 1125, Ser. No. 5346803 Reeves  
Drive No pulley
- Westinghouse Motor 2 HP, 440 RPM 1140 Ser. No. 1332409 Reeves  
Drive Pulley
- Westinghouse Motor 2 HP, 220-440 RPM 1150 Ser. No. 43237  
Reeves Drive Pulley
- 1 EIMCO Ball Mill Complete with liners and balls and U drive GE  
Motor 100 HP. RPM 720, Ser. No. 252006 GE AC Drum Switch
- 2 Pairs Double Callow Screens Incomplete - some parts in gravity plant
- 1 Roper Gear Pump No. N2172 Westinghouse Motor - 1-1/2 HP, 220-440,  
RPM 1730 Ser. No. 8106106
- 1 Wilfley 2" Pump (no motor)
- 1 U.S. Motor 3 HP, 220-440 RPM 600 Ser. No. 182448
- 1 Gardner Vertical Air Compressor with motor and motor circulating pump,  
4" 150 Lb. Pressure No. 73174
- 1 5-ton Block on 40 ft. overhead trolley and beam
- 1 40 ft. x 10 ft. Thickener Tank. U. S. Syncrogear Gear Reduction  
Motor 2 HP, 220-440 RPM 79 Ser. No. 179989
- 1 30 foot x 20 foot Fine Bin
- 1 Oliver Filter Ser. No. 4279R 5' 4" x 4' GE Motor 220-440 1 HP,  
RPM 1720 Ser. No. 5376959 Reeves Drive
- Sterling Motor 1 HP, 220-440 RPM 1800 Ser. No. 51048
- 6 Gallagher Flotation Cells No. 40  
GE Motor 7-1/2 HP, 220-440 RPM 1450 Ser. No. 5774635  
GE Motor " " " " " " GY14441  
GE Motor " " " " " " GY16974
- 1 Gallagher 4 cell Reagent Feeder  
Westinghouse Motor 1/4 HP, 220 RPM 1725 Ser. No. HH  
Transformer HP5EVA RPM 440 Volts 110-220 No. 3557
- 1 Dorr Diaphragm Pump
- 1 Conditioner Tank 8 x 8 Wood  
GE Motor 5 HP 220-440 RPM 1735 Ser. No. BR9947
- 1 Conditioner Tank 5 x 5 Wood  
Allis Chalmers Motor 3 HP, 220-440 RPM 1740 Ser. No. N5063-355  
Westinghouse Gear Reduction Motor 1-1/2 HP, 220-440 RPM 258,  
Ser. No. 17235
- 2 Dorr Diaphragm Pumps
- 1 Thickener Tank 4 x 4 Wood
- 1 Thickener Tank 8 x 12 Wood  
Diaphragm Pump  
Pacific Gear Reduction Motor 2 HP, RPM 115, Ser. No. 5MR817
- 2 Reagent Conditioner Tanks 6 x 8 Wood
- 1 Electric Eye
- 1 16 inch Roaster S.T. Johnson Oil Burner Type BH-0 Ser. No. 117736  
Oil Burner Motor 1/6 HP Ser. No. ED  
Sterling Gear Reduction Motor 220-440 RPM 30 3 HP Ser. No. 21289
- 1 Ingersoll Rand Vacuum Pump 10 x 4 Class ER-2, No. 63942 GE Motor 5 HP  
440 RPM 1155 Ser. No. 4071453



- 1 Small Root Blower (no plate)
- 1 Motor Pump Ingersoll Rand Size 1-1/2 inch. RV5, RPM 3470 Ser. No. 103617
- GE Motor Pump 5 HP, 220-440 RPM 3470 Ser. No. HM2439
- 1 Ingersoll Rand Motor Pump Size 1RVF-2 RPM 3470 No. A38656
- GE Motor 2 HP, 220-440 RPM 3470, Ser. No. HS837
- 2 5 KVA Transformers at tailings plant substation
- 3 75 KVA GE Transformers - same location
- 1 Small Roots Blower
- Partial barrels of following flotation reagents:
  - Aero X301, - Cresylic Acid, - Soddim Silicate, - Emulsol X20, - Short
  - Wooden barrel of black reagent, probably BT0, - one oil-fired
  - space heater mounted on two wheels and with electric-driven
  - oil burner.

#### Gravity Mill Shop

- 1 1/8" Electric Drill
- 1 Van Dorn Electric Grinder
- 1 1/2" Thor Electric Drill
- 1 3/4" Thor Electric Drill
- 1 8" T or Electric Saw

#### General Classification

- 1 75 HP Electric Motor (spare motor for main drive in gravity plant)
- 1 HD 14 Allis Chalmers Tractor powered with General Motors Diesel engine equipped with bulldozer.
- 1 Tough Payloader with cable for same
- 1 Dodge 4x4 Service Truck equipped with front winch and front boom
- 1 New Elevator Buckets, Size AA
- 1 New movable head for 10 x 20 Farrell Jaw Crusher
- 1 Stationary Jaw for same
- 1 New pair Roll Sheels for Stearns-Rogers rolls
- 1 Ingersoll Rand motor pump on mill circulating water (located near Tyler screen)
- 1 Bank of 4 Kraut Flotation Cells
- 1 Half-size Wilfley Table less head motion
- 1 Hevi-Duty Electric Muffle complete with thermocouple and temperature recording scale
- Assorted Glass Funnels with metallurgical reagents

Telephone 9-9962

*Ed*  
Nevada Oil & Mining Co.  
430 Gazette Bldg.  
Reno, Nevada

CERTIFICATE OF ASSAY  
**DEASON & NICHOLS**  
ASSAYERS & CHEMISTS

C. Ivan Nichols      Wm. J. Dwyson  
160 So. West Temple Street  
Salt Lake City 1, Utah

July 14, 1955

ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	Tungsten %	%	%	%
Nightingale								003			
# 351								0.16			
352								0.16			
353								0.17			
354								0.48			
355								0.13			
356								0.11			
357								0.10			
358								0.10			
359								0.105			
360								0.14			
361								0.12			
362								0.12			
363								0.08			
364								0.07			
365								0.07			
366								0.07			
367								0.07			
368								0.21			
369								0.08			
370								0.07			
371								0.07			
372								0.075			

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CHARGES \$

*C. Ivan Nichols*

**CERTIFICATE OF ASSAY**  
**DEASON & NICHOLS**  
 ASSAYERS & CHEMISTS

C. Ivan Nichols

Wm. J. Deason

160 So. West Temple Street  
 Salt Lake City 1, Utah

Nev-Tah Oil & Mining Co.  
 430 Gazette Bldg.  
 Reno, Nevada

- 2 -

July 14, 1955

## ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	NET LEAD %	COPPER %	ZINC %	INSOL %	Tungsten %	%	%	%
<del>Nightingale</del>								0.03			
373								0.07			
374								0.48			
375								0.22			
376								0.08			
Joe Visco-Star								0.15			
377								0.54			
378								0.79			
379								0.76			
380											
381								0.18			
382								0.11			
383								0.11			
Delamare-Lot 3								0.17			
384								0.33			
385								0.12			
386											
Lot 7								0.30			
387											
Lot 5								0.21			
388								0.34			
389											
Ragged Top-Lot R2								0.13			
390											

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 JUL 21 1955

CHARGES \$.

*C. Ivan Nichols*



Nev-Tah Oil & Mining Company  
 430 Gazette Bldg.  
 Reno, Nevada

- 3 -

C. Ivan Nichols      Wm. J. Deason

160 So. West Temple Street

Salt Lake City 1, Utah

July 14, 1955

## ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	Tungsten %03	%	%	%
Lead Top	Lot 3							0.13			
	Lot 4							0.08			
392								0.08			
Blair - Lot 1								0.07			
393											
394								0.20			
Blacksmith Tunnell								0.39			
395											
396								0.12			
Prospect Pit								0.12			
397											
398								0.18			
Alpine Lot 2								0.36			
399								0.31			
400											
401								0.30			
Stanley Day Lot 1											
402								0.33			
Lot 2											
403								0.10			
Stormy Day								0.34			
404											
405 - Tommy Kent											
Clyde Morrison								0.48			
406											

*C. Ivan Nichols*

CHARGES \$

Telephone 2-9962

Wash-Tah Oil & Mining Co.  
30 Gazette Bldg.  
Reno, Nevada

- 4 -

CERTIFICATE OF ASSAY  
**DEASON & NICHOLS**  
ASSAYERS & CHEMISTS

C. Ivan Nichols Wm. J. Deason

160 So. West Temple Street

Salt Lake City 1, Utah

July 14, 1955

ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	Tungsten W03	%	%	%
Temple								0.30			
407											
Chester								0.30			
408											
Gail Pier								0.42			
409											
Reid & Mayfield								0.37			
410											
Graig								0.40			
411											
Modoc								0.30			
412											
Dennison								0.33			
413											
Paradise								0.29			
414											
D D EOT								0.30			
415											
Composite Ending								0.30			
416											
D D Tails								0.31			
417											

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*L. Ivan Nichols*

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